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William J Kolegraff
3119 Turnberry Way
Jamul, CA 91935

EXAMINER	
STORM, DONALD L	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/537,985	VISSER ET AL.	
	Examiner	Art Unit	
	Donald L. Storm	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,28-40,42,43,45-50 and 52-54* is/are rejected.

7)☒ Claim(s) *18-27,41,44 and 51* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 18-27, 41, 44, and 51 would be allowable over the prior art of record if rewritten to include all of the limitations of the base claim and any intervening claims. The whole structure and interaction expressed by the combination of all limitations is not made obvious compared to the prior art of record for the whole invention of those dependent claims, particularly with explicit stability constraints on ICA or BSS. Certain assumptions that make the limitations clear have been considered for the claims, as described next or elsewhere in this Office action. The claims should also be rewritten to overcome any objections or rejections under 35 U.S.C. 112(2), especially as appearing in this Office action.

Priority

2. The Applicant's claim for the benefit of prior-filed provisional application 60/502,253 under 35 U.S.C. 119(e) is acknowledged. The Applicant has not complied with one or more conditions for receiving the benefit of the filing date of 60/502,253 as follows:

a. The disclosure of the prior-filed application, Application No. 60/502,253, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application.

b. If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 119(e), a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet.

c. The prior-filed application was not filed by an inventor or inventors named in the later-filed application as required for benefit under 35 U.S.C. 119(e).

3. The Applicant's claim for the benefit of prior-filed provisional application 60/432,691 under 35 U.S.C. 119(e) is acknowledged. The Applicant has not complied with one or more conditions for receiving the benefit of the filing date of 60/432,691 as follows:

If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 119(e), a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet.

Information Disclosure Statement

4. A copy of the International Search Report (Form PCT/ISA/210, second sheet) (received June 9, 2005) is present. The search report and its cited documents have been considered by the Examiner.

Drawings

5. The Examiner notes, without objection, the possibility of informalities in the drawings. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider correcting minor errors during normal review and revision of the drawings.

a. In Fig. 9, item 200, should the word "seperation" be --separation--?

b. In Fig. 10, item 1000, should the word "seperation" be --separation--?

Specification

6. The title is objected to because it is not sufficiently descriptive of the invention. A new title is required that is clearly indicative of the invention to which the claims are directed. See MPEP § 606.01. The Examiner suggests that the Applicant consider a title including these

elements: "System and Method for Speech Processing Using Independent Component Analysis under Stability Constraints."

Claim Informalities

7. Claim 10, and by dependency claim 11, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the channel" (line 2) needs clarification. Because no channel was previously recited in connection with either the desired signal or the separated signal, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a channel--.

8. Claim 12, and by dependency claims 13-14, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the desired signal" (line 2) needs clarification. Because desired audio signals were previously recited, the potential exists for confusion with the desired speech signal, also previously recited. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --the desired speech signal--.

9. Claims 18-27, 41, 44, and 51 are objected to as being (directly or indirectly) dependent upon a rejected base claim. See MPEP § 608.01(n)V.

10. Claim 18, and by dependency claims 19-27, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the noise signal channel" (lines 4-5) needs clarification. Because no channel was previously recited in connection with the noise signal, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a noise signal channel--. Note that claim 19 recites "the noise signal channel".

11. Claim 18, and by dependency claims 19-27, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the desired speech signal channel" (lines 8-9) needs clarification. Because no channel was previously recited in connection with the desired speech signal, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a desired speech signal channel--. Note that claim 19 recites "the desired speech channel" and "the desired speech signal channel".

12. Claim 19, and by dependency claim 20, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the desired speech channel" (line 1) needs clarification. Because no channel was previously recited in connection with the desired speech, it may be unclear as to what element this phrase refers. Is the desired speech channel intended to be the same as the desired speech signal channel of claim 18? To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a desired speech channel--.

13. Claim 19, and by dependency claim 20, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the input channel from the second microphone" (line 3) needs clarification. Which of the two microphones is the second? How does an input channel come from a microphone? No channel was previously recited in connection with the input signals. It may be unclear as to what scope of invention is provided by these claim elements. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --an input channel from a second microphone--.

14. Claim 19, and by dependency claim 20, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the input channel from the first microphone" (line 3) needs clarification.

Which of the two microphones is the first? How does an input channel come from a microphone? No channel was previously recited in connection with the input signals. It may be unclear as to what scope of invention is provided by these claim elements. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --an input channel from a first microphone--.

15. Claim 20 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the input channel signals" (line 1) needs clarification. Because input channels from both first and second microphones, both first and second input channels were previously recited, and these input channels were not recited to have signals associated with them, and input signal (of claim 1) were previously recited as associated with any channels, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --input channel signals--.

16. Claim 20 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the incoming signal energy" (line 3) needs clarification. Because no incoming signal and no energy were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --incoming signal energy--.

17. Claim 21 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the filter weight learning rule for the first adaptive ICA cross filter" (lines 1-2) needs clarification. Because the learning rule was not previously recited as associated with filter weights, it may be unclear as to what element this phrase refers. Because the first filter was not previously recited as a cross filter, it may be unclear if an artisan must find the scope of claim 18 to be further limited by the

filter being a cross filter, or how the scope of claims 18 and 21 relate due to the limitation of the ICA's being a cross filter here. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a filter weight learning rule for a first adaptive cross filter--.

18. Claim 21 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the filter weight learning rule for the second adaptive ICA cross filter" (line 3) needs clarification. Because the learning rule was not previously recited as associated with filter weights, it may be unclear as to what element this phrase refers. Because the second filter was not previously recited as a cross filter, it may be unclear if an artisan must find the scope of claim 18 to be further limited by the filter being a cross filter, or how the scope of claims 18 and 21 relate due to the limitation of the ICA's being a cross filter here. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a filter weight learning rule for a second adaptive cross filter--.

19. Claim 21 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the filter coefficients" (line 2 and line 4) needs clarification. Are these the same filter coefficients? Because no filter coefficients were previously recited, but both first and second filters inherently have coefficients, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted each of these phases as --filter coefficients--.

20. Claim 22 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the first adaptive ICA cross filter weights" (lines 1-2) needs clarification. Because the first filter was not previously recited as a cross filter, it may be unclear if an artisan must find the scope of claim 18 to be further limited by the filter being a cross filter, or how the scope of claims 18 and 22 relate due to the limitation of the ICA's being a cross filter here. To further timely prosecution and

evaluate prior art, the Examiner has interpreted this phase as --first adaptive ICA cross filter weights --.

21. Claim 22 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the second adaptive ICA cross filter weights" (lines 2-3) needs clarification. Because the second filter was not previously recited as a cross filter, it may be unclear if an artisan must find the scope of claim 18 to be further limited by the filter being a cross filter, or how the scope of claims 18 and 22 relate due to the limitation of the ICA's being a cross filter here. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --second adaptive ICA cross filter weights--.

22. Claim 23 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the post-processed outputs" (lines 3-4) needs clarification. Because no post-processing was previously recited as producing output, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --post-processing outputs--.

23. Claim 23 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the input channels" (line 4) needs clarification. Because input channels from both first and second microphones and both first and second input channels were previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --input channels--.

24. Claim 24 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the adaptive ICA cross filters" (line 2) needs clarification. Because the filters were not previously

recited as cross filters, it may be unclear if an artisan must find the scope of claim 18 to be further limited by the filter's being a cross filter, or how the scope of claims 18 and 24 relate due to the limitation of the ICA's being cross filters here. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --adaptive ICA cross filters--.

25. Claim 25 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the post processing module" (line 2) needs clarification. Because no post-processing module was previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --the post processing--.

26. Claim 26 is objected to for the same reasons as claim 25 because the limitations are recited using obviously similar phrases.

27. Claim 28, and by dependency claims 29-38, are objected to under 37 CFR 1.75(a) because the scope must be interpreted when the symbols making up the claim limitations are not defined in the claim. The symbol "ICA" (line 4) should be defined in the claims at least the first time used, if a concise and accurate definition is available. No new matter may be introduced into the disclosure as filed.

28. Claim 28, and by dependency claims 29-38, are objected to under 37 CFR 1.75(a) because the scope must be interpreted when the symbols making up the claim limitations are not defined in the claim. The symbol "BSS" (line 4) should be defined in the claims at least the first time used, if a concise and accurate definition is available. No new matter may be introduced into the disclosure as filed.

29. Claim 31 is objected to as failing to define the invention with the clarity required by 37 CFR 1.75(a). Because it is written in dependent form, claim 31 must be construed to incorporate by reference all the limitations of the claim to which it refers. Claim 30 includes a speech device comprising microphones, a processor, and steps; therefore, claim 31 includes those microphones, a processor, and steps. However, as written, claim 31 appears to be attempting to claim only method limitations of its parent claim; maybe the steps define a method. The Applicant should cancel the claim(s), or amend the claim(s) to further limit the parent claim with the clarity required by 37 CFR 1.75(a). To clearly claim only the method limitations, the Applicant should rewrite the claim(s) in independent form.

30. The Applicant is advised that should claim 33 be found allowable, claim 34 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

31. Claim 39, and by dependency claims 40-51, are objected to for the same (two) reasons as claim 28 because the limitations are recited using obviously similar symbols.

32. Claim 51 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the desired speech signal channel" (line 9) needs clarification. Because no channel was previously recited in connection with any one of the desired speech signals, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has

interpreted this phase as --a desired speech signal channel--. Note that claim 39 recites "desired audio signals" and channels transmitting them.

33. Claim 51 is objected to under 37 CFR 1.75(a) because the meaning of the phrase "the desired speech signal" (lines 10-11) needs clarification. Is this the signal of the desired speech signal channel? Because no, one particular desired speech signal of the desired speech signals of the preamble of claim 39, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phase as --a desired speech signal--. Note that claim 39 recites one (or more) "desired audio signals".

34. The Examiner notes, without objection, the possibility of informalities in the claims. It is in the best interests of the patent community that the Applicant be aware of these editorial situations and consider correcting minor errors during normal review and revision of the claims:

a. In claim 1 (next-to-last line), is a word or phrase missing from the phrase "into at one or more"?

b. In claim 18 (line 7), is a word or phrase missing between the consecutive commas, ",," (comma, comma)?

c. In claim 29, should the meaning of the phrase "the noise line" (line 2) be clarified? The only antecedence is the noise signal line.

Claim Rejections - 35 USC § 102

35. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Bell

36. Claims 1-5, 7-8, 12-13, 39-40, 42-43, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Bell [US Patent 5,706,402].

37. Regarding claim 1, Bell [at columns 17-18, Fig. 7, and claim 13] describes an embodiment in which a desired speech signal in an acoustic environment is separated. Bell describes BSS into desired audio and noise by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

input signals being desired speech and other acoustic signals [at column 19, lines 4-28, as a speaking voice, other speaking voices, babble, music, and noise];

receiving a plurality of the input signals, the input signals being generated responsive to the desired signal and the other signals [at column 24, lines 25-29, as receiving a plurality of input signals, including a combination of source signals and interferer signals];

processing the received signals under stability constraints [at column 24, lines 38-51, as produce training signals responsive to the input signals and training weights responsive to the training signals and proportionally to a learning rate];

the processing uses (ICA or) BSS [at column 17, lines 54-65, as output from blind source separation];

separating the input signals into at one or more signals [at column 24, lines 34-36, as produce output signals responsive to the input signals];

the separated signals are desired signals and noise signals [at column 24, lines 54-57, as output signals are the input signals with interferer signals canceled and the interferer signals];

the desired signals are audio [at column 19, lines 27-28, as a successfully separated speaking voice].

38. Regarding claim 2, Bell also describes:

one of the desired audio signals is the desired speech signal [at column 19, lines 4-28, as a successfully separated speaking voice of a speaking voice and other speaking voices].

39. Regarding claim 3, Bell also describes:

where the (ICA or) BSS process includes (minimizing or) maximizing the mathematical formulation of information directly (or indirectly through approximation) [at column 17, lines 59-63 and column 12, lines 40-44, as maximize the natural logarithm of a Jacobian, to maximize output entropy for a given input entropy, which forces weights to follow blind separation rules];

the mathematics formulates mutual information [at column 9, lines 28-34, as Eqn. 1 expresses mutual information as entropy of the output signal and output signal entropy that did not come from the input signal].

40. Regarding claim 4, Bell also describes:

stabilizing the process by pacing weight adaptation dynamics [at column 24, lines 38-51 and column 11, lines 22-27, as produce training signals and training weights responsive to the training signals proportionally to a learning rate].

the process is ICA and ICA weights are adapted [at column 7, lines 28-30, as the blind separation process becomes the problem of learning ICA weights].

41. Regarding claim 5, Bell also describes:

stabilizing the ICA process by scaling ICA inputs using an adaptive scaling factor to constrain weight adaptation speed [at column 10, line 59-column 11, line 28, as Eqns. 10 and 11 scales the learning rate using a function of input x in which the input x is first multiplied by a scaling weight].

42. Regarding claim 7, Bell also describes:

peripheral processing techniques are applied to the input [at column 18, lines 30-37, as special processing was performed on the input waveforms of speech for normalization to a common interval];

peripheral processing techniques are applied to the separated signals [at column 17, lines 32-36, as subtract the isolated interferer output signal from the received signal];

peripheral processing is applied in varying degrees [at column 17, lines 32-36, as the output signal is subtracted]; and

peripheral processing is applied in varying degrees [at column 18, lines 30-37, as the input waveforms of speech were normalized].

43. Regarding claim 8, Bell also describes:

utilizing pre-processing techniques (or information) to enhance the performance of the separation [at column 18, lines 25-37, as special processing was performed on the input waveforms of speech for normalization to a common interval to permit operation in which signals were separated].

44. Regarding claim 12, Bell also describes:

post-processing used to improve the quality of the desired signal utilizing at least one of the noise signals (or at least one of the input signals) [at column 17, lines 33-35, as then remove interfering signals from a receive signals by subtracting the interfering signal].

45. Regarding claim 13, Bell also describes:

using the separated noise signal to further separate and enhance the desired speech signal [at column 17, lines 33-35, as subtracting the interfering signal to then remove interfering signals from a receive signals].

46. Regarding claim 39, Bell [at columns 17-18, Fig. 7, and claim 13] describes an embodiment of a system in which a desired speech signal in an acoustic environment is separated. Bell describes BSS into desired audio and noise by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

a plurality of input channels each receiving one or more acoustic signals [at column 1, lines 36-51, as each mixture of sound source signals reaches one of two microphones];

separate the received signals under stability constraints into at one or more separated signals transmitted on a plurality of output channels [at column 24, lines 34-51, as produce training signals responsive to the input signals and training weights responsive to the training signals and proportionally to a learning rate to produce output signals responsive to the input signals];

the separated signals are desired signals and one or more noise signals [at column 24, lines 54-57, as output signals are the input signals with interferer signals canceled and the interferer signals];

the desired signals are audio [at column 19, lines 27-28, as a successfully separated speaking voice].

the separating is by at least one (ICA or) BSS filter [at column 17, lines 54-65, as blind source separation network].

47. Regarding claim 40, Bell also describes:

the desired signal is a speech signal received in the plurality of acoustic signals [at column 19, lines 4-28, as a successfully separated speaking voice of a speaking voice and other speaking voices].

48. Regarding claim 42, Bell also describes:

stabilize the process by pacing weight adaptation dynamics [at column 24, lines 38-51 and column 11, lines 22-27, as produce training signals and training weights responsive to the training signals proportionally to a learning rate].

the process is ICA by the filter and ICA weights are adapted [at column 7, lines 28-30, as the blind separation process becomes the problem of learning ICA weights].

49. Regarding claim 43, Bell also describes:

stabilize the process by scaling inputs using an adaptive scaling factor to constrain weight adaptation speed [at column 10, line 59-column 11, line 28, as Eqns. 10 and 11 scales the learning rate using a function of input x in which the input x is first multiplied by a scaling weight];

the process is ICA by the filter with ICA inputs [at column 7, lines 28-30, as the blind separation process becomes the problem of learning ICA weights].

50. Regarding claim 48, Bell also describes:

one or more microphones connected to the input channels [at column 1, lines 36-51, as each mixture of sound source signals reaches one of two microphones].

Jourjine

51. Claims 1-2, 8-16, 28-31, 39-40, 45-49, and 52-54 are rejected under 35 U.S.C. 102(e) as being anticipated by Jourjine et al. [US Patent 6,526,148].

52. Regarding claim 1, Jourjine [at column 3, lines 6-16] describes separating a desired speech signal in an acoustic environment by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

receiving a plurality of input signals that were generated responsive to a desired speech signal and other acoustic signals; processing them using BSS (or other); and separating them into one (or more) desired audio signals and one (or more) noise signals [see Fig. 2, items SOUND SOURCES, 102, 104, 206, their connections, and their descriptions, especially at column 3, lines 9-62, of received audible signals for a desired speaker and competing, other, background speakers, and demixing them in accordance with the BSS technique];

stability constraints on the processing [at column 11, lines 43-44, as large enough N to guarantee stability].

53. Regarding claim 2, Jourjine also describes:

one of the desired audio signals is the desired speech signal [at column 14, lines 35-36, as the voice separated from noise-voice].

54. Regarding claim 8, Jourjine also describes:

utilizing preprocessing techniques (or other) to enhance the performance of the separation [at column 3, lines 26-36, as pre-processing the mixed signals supplies the improved sounds after processing].

55. Regarding claim 9, Jourjine also describes:

improving the conditioning of a mixing scenario applied to the input signals [at column 11, lines 54-57, as preprocess microphone data as if it were on identical microphones].

56. Regarding claim 10, Jourjine also describes:

utilize information to identify the channel containing the separated desired signal [at column 3, lines 58-62, as calculate the signal delay to select the frontal direction for the desired signal];

the information is characteristic of the desired signal [at column 9, line 65, as delay is unique to the source].

57. Regarding claim 11, Jourjine also describes:

the characteristic information is temporal (or other) [at column 9, line 65, as delay is unique to the source].

58. Regarding claim 12, Jourjine also describes:

postprocessing techniques are used to improve the quality of the desired signal utilizing the at least one of the noise signals (or other) [at column 13, lines 7-54, as postprocessing filter to improve the quality of separated outputs by experimental noise power spectral density].

59. Regarding claim 13, Jourjine also describes:

using the separated noise signal to further separate and enhance the desired signal [at column 13, lines 7-54, as the experimental noise power spectral density improve the quality of separated voices sound].

60. Regarding claim 14, Jourjine also describes:

use the noise signal to estimate the noise spectrum for a noise filter [at column 13, lines 7-54, as the noise corrupting the mixture found the noise power spectral density experimentally to apply a filter].

61. Regarding claim 15, Jourjine also describes:

spacing apart at least two microphones and generating one of the input signals at each respective microphone [at column 3, lines 45-55, as separate microphones from each other and output signals from two microphones in response to received audible signals delayed with respect to each other].

62. Regarding claim 16, Jourjine also describes:

spacing the microphones between about 1mm and about 1m apart [at column 3, lines 45-55, as separate microphones 10-15 mm from each other].

63. Regarding claim 28, Jourjine [at column 3, lines 6-16] describes a speech device by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

at least two spaced apart microphones constructed to receive acoustic sound signals and being a distance from a speech source, receiving sound signals from them; separating them into at

least one desired speech signal line and at least one noise signal line by a BSS (or other) processor coupled to the microphones and operating steps [see Fig. 2, items SOUND SOURCES, 102, 104, 206, their input and output connections, and their descriptions, especially at column 3, lines 9-62, of microphones separated from each other and output signals from two microphones in response to received audible signals for a desired speaker and competing, other, background speakers delayed with respect to each other, and demixing them in accordance with the BSS technique embodied as a programmable processor];

the microphones being an expected distance from a source [at column 8, lines 24-25, as far field conditions (distance between microphones being much less than distance from sources)];

stability constraints on separating [at column 11, lines 43-44, as large enough N to guarantee stability].

64. Regarding claim 29, Jourjine also describes:

a postprocess filter coupled to the noise line and to the desired speech signal line [see Fig. 2, items 206, 208, their input and output connections, and their descriptions, especially at column 13, lines 7-54, as the noise corrupting the mixture found the noise power spectral density experimentally to apply a filter].

65. Regarding claim 30, Jourjine also describes:

the microphones are spaced apart about 1mm to about 1m [at column 3, lines 45-55, as separate microphones 10-15 mm from each other].

66. Regarding claim 31, Jourjine also describes:

preprocessing the signals received at each microphone [at column 11, lines 54-57, as preprocess microphone data as if it were on identical microphones].

67. Regarding claim 39, Jourjine [at column 3, lines 6-16] describes a system separating a desired speech signal in an acoustic environment by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

a plurality of input channels each receiving one or more acoustic signals; separating and transmitting the signals using at least one BSS (or other) filter into one (or more) desired audio signals and one (or more) noise signals [see Fig. 2, items SOUND SOURCES, 102, 104, 206, 208, their connections, and their descriptions, especially at column 3, lines 9-62, of received audible signals for a desired speaker and competing, other, background speakers, demixing them in accordance with the BSS technique, and providing the outputs to channel selection];

stability constraints on the separating [at column 11, lines 43-44, as large enough N to guarantee stability].

68. Regarding claim 40, Jourjine also describes:

the desired audio signal is a speech signal received in the plurality of acoustic signals [at column 14, lines 35-36, as the voice separated from noise-voice].

69. Regarding claim 45, Jourjine also describes:

one (or more) peripheral processing filters applied to the output (or other) signals [at column 13, lines 7-54, as postprocessing filter to improve the quality of separated outputs].

70. Regarding claim 46, Jourjine also describes:

one or more preporcessing filters [at column 3, line 37, as unit for calibrating or preprocessing].

71. Regarding claim 47, Jourjine also describes:

one (or more) postprocessing filters [at column 13, lines 7-54, as postprocessing filter to improve the quality of separated outputs].

72. Regarding claim 48, Jourjine also describes:

one or more microphones connected to the input channels [see Fig. 2, items SOUND SOURCES, 102, 104, 204, 206, their input and output connections, and their descriptions, especially at column 3, lines 9-62, of two microphones and received audible signals for a desired speaker and competing, other, background speakers].

73. Regarding claim 49, Jourjine also describes:

two or more microphones each spaced apart between about 1mm and about 1m apart [at column 3, lines 45-55, as separate microphones 10-15 mm from each other].

74. Regarding claim 52, Jourjine [at column 3, lines 6-16] describes a system for isolating a speech signal by describing the content and functionality of the recited limitations recognizable as a whole to one versed in the art as the following terminology:

a set of signal generators, each arranged to generate a mixed signal indicative of a mixture of the speech signal an other acoustic signals, processing them and separating them into the speech signal and at least one noise signal by processor that receives each mixed signal and uses BSS (or other) method [see Fig. 2, items SOUND SOURCES, 102, 104, 206, their input and output connections, and their descriptions, especially at column 3, lines 9-62, of microphones separated from each other and output signals from two microphones in response to received audible signals for a desired speaker and competing, other, background speakers delayed with respect to each

other, and demixing them in accordance with the BSS technique embodied as a programmable processor];

stability constraints on separating [at column 11, lines 43-44, as large enough N to guarantee stability];

a speech enabled unit receiving the speech signal [at column 13, lines 32-55, as a filter requiring knowledge of the voice spectral density].

75. Regarding claim 53, Jourjine also describes:

the signal generators are constructed as acoustic transducers [see Fig. 2, items SOUND SOURCES, 102, 104, 206, their input and output connections, and their descriptions, especially at column 3, lines 9-62, of microphones separated from each other and output signals from two microphones in response to received audible signals for a desired speaker and competing, other, background speakers].

76. Regarding claim 54, Jourjine also describes:

acoustic transducers are microphones constructed to receive acoustic signals in the human-speech [see Fig. 2, items SOUND SOURCES, 102, 104, 206, their input and output connections, and their descriptions, especially at column 3, lines 9-62, of microphones separated from each other and output signals from two microphones in response to received audible signals for a desired speaker and competing, other, background speakers].

Claim Rejections - 35 USC § 103

77. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

> such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

78. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. The Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Bell and Sejnowski

79. Claims 6, 9, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell [US Patent 5,706,402] in view of Sejnowski [US Patent 5,383,164].

80. Regarding claim 6, Bell describes the included claim elements by dependency as indicated elsewhere in this Office action. Bell [at column 20, lines 21-30] also describes that reverberation effects are not completely avoided when the learned optimal deconvolution filter cannot be the ideal deconvolution filter, but Bell does not propose a solution to the unseparated echo that remains. In particular, Bell does not explicitly describe filtering the learned filter weights in the time domain and the frequency domain to avoid reverberation effects.

Like Bell, Sejnowski [at column 6, lines 50-68] also applies a blind source separation network to handle interference from delayed signals. Sejnowski extends the BSS solution with directional separation by beamforming so that linear combinations of inputs to BSS can be further distinguished. Sejnowski also describes:

stabilizing ht process by filtering learned filter weights in the time domain and the frequency domain [at column 8, line 62-column 9, line 12, as add a filter to each of the weighting multipliers using convolution in the time domain and corresponding and multiplication in the frequency domain].

As indicated, Sejnowski shows that filtering filter weights as learned in the BSS process in the time domain and frequency domain was known to artisans at the time of invention. Since Sejnowski [at column 9, lines 25-35] also points out that filtering the learned process has the advantage of equalizing the inputs signals across frequency provide a way for BSS to operate on broadband signals, it would have been obvious to one of ordinary skill in the art of broadband beamforming at the time of invention to include the concepts described by Sejnowski, at least including filtering the weights learned in Bell's ICA process in the time and frequency domains to further separate the echo remaining from Bell's BSS, because Sejnowski points out that the weight equalization should result in complete cancellation of the time delays (and phase delays).

81. Regarding claim 9, Bell describes the included claim elements by dependency as indicated elsewhere in this Office action. Bell [at column 18, lines 30-37] also describes pre-processing the input signal by normalization to operate the equipment for source separation. However, Bell does not explicitly describe improving the conditioning of a mixing scenario applied to the input signals.

Like Bell, Sejnowski [at column 6, lines 50-68] also applies a blind source separation network to handle interference from delayed signals. Sejnowski extends the BSS solution with directional separation by beamforming so that linear combinations of inputs to BSS can be further distinguished. Sejnowski also describes:

improving the conditioning of a mixing scenario applied to the input signals [at column 9, lines 26-38, as provide the linear combination of source signals necessary for proper convergence by filters applied to the individual sensor elements].

As indicated, Sejnowski shows that improved conditioning of a mixing scenario applied to the input signals was known to artisans at the time of invention. Since Sejnowski also points out that improving the mixing condition of the input signals has the advantage that the source signal

are then in condition for proper convergence of the source separation processor, it would have been obvious to one of ordinary skill in the art of signals condition at the time of invention to include the concepts described by Sejnowski, at least including improved condition of Bell's input of mixed speech to enhance the performance of Bell's BSS, because Sejnowski points out that the convergence of the BSS will be better using a mixed signals after improved conditioning.

82. Regarding claim 15, Bell describes the included claim elements by dependency as indicated elsewhere in this Office action. Bell [at column 1] also discusses separating speaking voices, and Bell describes:

generating one of the input signals at each respective microphone of at least two microphones [at column 1, lines 36-51, as each mixture of sound source signals reaches one of two microphones].

However, Bell does not explicitly describe spacing the microphones apart from each other.

Like Bell, Sejnowski [at column 6, lines 50-68] also applies a blind source separation network to handle interference from delayed signals. Sejnowski extends the BSS solution with directional separation by beamforming so that linear combinations of inputs to BSS can be further distinguished. Sejnowski also describes:

spacing apart at least two microphones [at column 4, lines 47-48, as three microphones are positioned in three different locations];

generating one of the input signals at each respective microphone [at column 4, lines 48-58, as a linear combination of signals from talkers has a different time delay at each microphone].

As indicated, Sejnowski shows that generating input signals at at least two microphones spaced apart was known to artisans at the time of invention. Since Sejnowski [at column 5, lines 51-58] also points out that BSS has the advantage of separating signals that are unknown in

location, it would have been obvious to one of ordinary skill in the art of array beamforming at the time of invention to include the concepts described by Sejnowski, at least including generating input signals at at least two microphones spaced apart as input to Bell's BSS, because Sejnowski's addition of beamforming with microphone arrays provides the advantage of isolating signals that are unknown in location to the BSS.

Bell and Sejnowski and Watson

83. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell [US Patent 5,706,402] in view of Sejnowski [US Patent 5,383,164] and Watson et al. [US Patent Application Publication 2002/0110256.

84. Regarding claim 16, Bell and Sejnowski describe and make obvious the included claim elements by dependency as indicated elsewhere in this Office action. Bell and Sejnowski describe and make obvious the speech and noise input through microphone arrays of microphones spaced apart. However, neither Bell nor Sejnowski are concerned with any particular distance of microphone spacing, although Sejnowski [at abstract] anticipates a cellular communications receiver. In particular, Bell and Sejnowski do not explicitly describe spacing the microphones between about 1mm and about 1m apart.

Watson [at 0010-18] pertains particularly to microphones and arranging them in the presence of interfering sources. Watson describes:

spacing microphones between about 1mm and about 1m apart [at 0136, distance between microphone structures of 1.7 inches].

As indicated, Watson had described spacing microphones between about 1mm and about 1m apart at the time of invention. Watson [at 0136] also points out that microphone spacing is advantageously determined according to the frequency response of the system of use, the

telephone network. Here the spacing has the advantage of better interference cancellation in the frequency range of existing telephone networks. Since Watson describes that microphone spacing advantage, it would have been obvious to one of ordinary skill in the art of signal separation at the time of invention to include the concepts described by Watson, at least including spacing Bell's and Sejnowski's microphones about 1.7 inches, because that spacing would improve the signal recovery from noise especially in the frequency range of existing telephone networks.

85. Regarding claim 17, Bell and Sejnowski describe and make obvious the included claim elements by dependency as indicated elsewhere in this Office action. Bell and Sejnowski describe and make obvious the speech and noise input through microphone arrays of microphones spaced apart. However, neither Bell nor Sejnowski are concerned with particular mounting devices for the microphones, although Sejnowski [at abstract] anticipates a cellular communications receiver. In particular, Bell and Sejnowski do not explicitly describe spacing the microphones apart on a telephone receiver, a headset, or a hands-free kit.

Watson [at 0010-18] pertains particularly to microphones and arranging them in the presence of interfering sources. Watson describes:

spacing the microphones apart on a kit (or other) [at 0015, as an accessory that includes a housing, a first microphone supported by the housing, and a second microphone supported by the housing at a location spaced from the first microphone];

the kit provides for hands-free [at 0005, as a clip or the like for mounting a microphone to improve hands-free performance].

As indicated, Watson had described spacing the microphones apart on a hands-free kit. Since Watson [at 0004] also points out that hands-free operation is preferable for cellular telephone use in vehicles, such that the user need not hold the device while talking, it would have been obvious to one of ordinary skill in the art of signal separation at the time of invention to

include the concepts described by Watson, at least including spacing the microphones apart on a hands-free kit, because that mounting would provide hands-free operation for cellular telephone use in vehicles, such that the user need not hold the device while talking.

Jourjine and Watson

86. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jourjine et al. [US Patent 6,526,148] in view of Watson et al. [US Patent Application Publication 2002/0110256].

87. Regarding claim 32, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the microphones, with the microphones spaced apart on the curved face of the device.

However, Jourjine does not explicitly describe one of the microphones on a face of the device housing and the other microphone on another face of the device housing.

Watson [at 0010-18] pertains particularly to microphones and arranging them in the presence of interfering sources. Watson describes:

one of the microphones on a face of the device housing and the other microphone on another face of the device housing [at 0097, as microphone transducer 306 having its front face ported to the front face opening and microphone transducer 304 having its front face ported to the rear ports].

As indicated, Watson had described one of the microphones on a face of the device housing and the other microphone on another face of the device housing at the time of invention and Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of improving directionality of spaced-apart microphones, increasing the SNR of desired speech, and improving speech

intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired speech channel for Watson's oppositely mounted microphone, because Jourjine's BSS would improve directionality of the spaced-apart microphones, increase the SNR of desired speech, and improve speech intelligibility for Watson's oppositely mounted microphones.

88. Regarding claim 33, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the microphones, with the microphones spaced apart on the face of the device.

However, Jourjine does not explicitly describe the microphones on device housing of a wireless phone.

Watson [at 0010-18] pertains particularly to microphones and arranging them in the presence of interfering sources. Watson describes:

the speech device is constructed to be a wireless phone [at 0004, as cellular telephones, satellite telephones].

As indicated, Watson had described the microphones on a wireless phone housing in a noise environment where the noise is hard to attenuate and Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of increasing the SNR of desired speech received at microphones in interfering noise and improving speech intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired speech channel for Watson's microphones on wireless phones, because Jourjine's BSS would increase the SNR of

desired speech and improve speech intelligibility for Watson's microphones mounted on wireless phones.

89. Claim 34 sets forth additional limitations similar to limitations set forth in claim 33. Jourjine and Watson describe and make obvious the additional limitations as indicated there.

90. Regarding claim 35, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the microphones, with the microphones spaced apart on the face of the device.

However, Jourjine does not explicitly describe the microphones on device housing of a hands-free car kit.

Watson [at 0010-18] pertains particularly to microphones and arranging them in the presence of interfering sources. Watson describes:

spacing the microphones apart on a kit (or other) [at 0015, as an accessory that includes a housing, a first microphone supported by the housing, and a second microphone supported by the housing at a location spaced from the first microphone];

the kit provides for hands-free [at 0005, as a clip or the like for mounting a microphone to improve hands-free performance].

As indicated, Watson had described spacing the microphones apart on a hands-free kit and Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of increasing the SNR of desired speech received at microphones in interfering noise and improving speech intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired speech channel for Watson's microphones on a hands-free car kit, because Jourjine's BSS

would increase the SNR of desired speech and improve speech intelligibility for Watson's microphones mounted on a hands-free car kit.

Jourjine and Bhadkamkar

91. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jourjine et al. [US Patent 6,526,148] in view of Bhadkamkar et al. [US Patent 6,002,776].

92. Regarding claim 36, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the microphones, with the microphones spaced apart on the face of the device.

However, Jourjine does not explicitly describe the microphones on device housing of a headset.

Bhadkamkar [at column 1] also describes separation of a sound source from the presence of interfering sources and noise. Bhadkamkar describes:

the speech device is constructed to be a headset [at column 2, lines 40-44, as sound separation techniques related to an aviation headset].

As indicated, Bhadkamkar had described construction the sound separation device as a headset and Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of increasing the SNR of desired speech received at microphones in interfering noise and improving speech intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired speech channel for Bhadkamkar's microphones on a headset, because Jourjine's BSS would increase the SNR of desired speech and improve speech intelligibility for Bhadkamkar's microphones mounted on a headset.

Jourjine and Shimizu

93. Claims 37 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jourjine et al. [US Patent 6,526,148] in view of Shimizu [US Patent Application Publication 2002/0136328].

94. Regarding claim 37, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the microphones, with the microphones spaced apart on the face of the device.

However, Jourjine does not explicitly describe the microphones on device housing of a headset.

Shimizu [at 0021-22] also describes separation of a sound source from the presence of interfering sources and noise. Shimizu describes:

the speech device is constructed to be a personal data assistant [at 0115, as the device may be applied to a PDA].

As indicated, Shimizu had described construction the sound separation device as a PDA and Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of increasing the SNR of desired speech received at microphones in interfering noise and improving speech intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired speech channel for Shimizu's microphones on a PDA, because Jourjine's BSS would increase the SNR of desired speech and improve speech intelligibility for Shimizu's microphones mounted on a PDA.

95. Regarding claim 50, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the microphones, with the microphones spaced apart on the face of the device.

However, Jourjine does not describe the system when the device is in its user's hand. In particular, Jourjine does not explicitly describe the microphones on device housing of a handheld device.

Shimizu [at 0021-22] also describes separation of a sound source from the presence of interfering sources and noise. Shimizu describes:

the system is constructed on a handheld device [at 0115, as the device may be applied to a common portable telephone].

As indicated, Shimizu had described construction the sound separation device as a common portable telephone, which is inherently handheld. Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of increasing the SNR of desired speech received at microphones in interfering noise and improving speech intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired speech channel for Shimizu's microphones on a handheld telephone, because Jourjine's BSS would increase the SNR of desired speech and improve speech intelligibility for Shimizu's microphones mounted on a handheld telephone.

Jourjine and Lee and Moed

96. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jourjine et al. [US Patent 6,526,148] in view of Lee et al. [International Publication Number WO 01/27874] and Moed et al. [US Patent 5,770,841].

97. Regarding claim 38, Jourjine describes the included claim elements by dependency as indicated elsewhere in this Office action. Jourjine [see Fig. 2] also describes a housing on which to mount the signal separation processor.

However, Jourjine does not explicitly describe the device housing is a handheld bar code scanning device.

Lee [at abstract] also describes separation of a sound source from the presence of interfering sources and noise. Lee describes:

the speech device is constructed to be a bar code scanning device [at page 24, lines 13-22, as the device may be applied to read a bar code].

As indicated, Lee had described construction the signal separation device as a bar code reader and Jourjine had described BSS for separating a desired signal from noise. Since Jourjine [at column 3, lines 3-13] also points out that BSS has the advantages of increasing the SNR of desired signal received at sensors in interfering noise and improving signal intelligibility, it would have been obvious to one of ordinary skill in the art of noise separation at the time of invention to include the concepts described by Jourjine, at least including BSS processing and selection of desired signal channel for Lee's sensors of a bar code reader, because Jourjine's BSS would increase the SNR of the desired signal and improve recognition for Lee's sensors mounted on a bar code reader.

However, neither Jourjine nor Lee explicitly describes a handheld bar code reader. Moed [at column 1] also describe a bar code reader, and Moed describes:

a handheld bar code reader [at column 1, lines 45-48, as hand held readers for reading bar codes].

As indicated, Moed shows that a handheld bar code reader was known to artisans at the time of invention. Since Moed [at column 1, lines 45-48] also points out that a handheld reader

has the advantage of use at the time of pick up and delivery of packages encoded with tracking codes, it would have been obvious to one of ordinary skill in the art of package delivery at the time of invention to include the concepts described by Moed, at least including a bar code reader that is handheld as the bar code reader of Lee in view of Jourjine, because that would provide the advantage that employees using the handheld bar code reader could scan the code when picking up or delivering packages coded with tracking bar codes.

Conclusion

98. The following references here made of record are considered pertinent to applicant's disclosure:

Lee et al. [US Patent 6,424,960] describes the same as WO 01/27874.

99. Any response to this action should be mailed to:

Mail Stop Amendment

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to:

(571) 273-8300, (for both formal communications intended for entry and for informal or draft communications, but please label informal fax as "PROPOSED" or "DRAFT")

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********** **IMPORTANT NOTICE** **********

The Examiner handling this application, who was assigned to Art Unit 2654, is assigned to **DIVISION 2626** as a result of consolidation in Technology Center 2600. Please include the new Division in the caption or heading of any communication. Your cooperation in this matter will assist in the timely processing of the submission and is appreciated by the Office.

100. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Division 2626, whose telephone number is (571) 272-7614. The examiner can normally be reached on weekdays between 7:00 AM and 3:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 571-272-4100 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: ebc@uspto.gov. For general information about the PAIR system, see http://pair-direct.uspto.gov. If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donald L. Storm

Donald L. Storm
Examiner, Division 2626

October 30, 2006